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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/021,608      | 12/11/2001  | Jong-Kill Lim        | 5484-85             | 7236             |

7590 05/28/2003  
MARGER JOHNSON & McCOLLOM, P.C.  
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Portland, OR 97205

EXAMINER

NGUYEN, HUNG

ART UNIT PAPER NUMBER

2851

DATE MAILED: 05/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/021,608

Applicant(s)

LIM, JONG-KILL

Examiner

Hung Henry V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 8 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. As to claims 4, 8, and 11, the recitation of "wherein the step of determining the resist film exposure time includes analyzing the received temperature data and an error value in a pattern size" is indefinite and vague. It is not clearly understood how "an error value in a pattern size" is analyzed as claimed. There is no "means" to detect the information regarding "an error value in a pattern size". The applicant is reminded that in order to be given patentable weight, a functional recitation must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172; 388 O.G. 279. Accordingly, claims 4, 8, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps/structures, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps/ or "means" are: for detecting the error value in a pattern size.

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***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. As best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, supra). Claims are anticipated by reference.
6. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (U.S.Pat. 6,051,349).

As to claims 1-11, Yoshioka et al discloses an exposure control apparatus in a lithography system and corresponding method, comprising a resist coating and developing apparatus (1) and a wafer transferring mechanism (22) (see col.1, lines 15-25), a prebake unit, a post exposure bake and hard bake unit (see col.6, lines 3-36), and a CPU (45) for obtaining the temperature data of the post baking temperature unit or the developing solution temperature based on the line width of the resist film/pattern size, and a sensor (65) is disposed within the resist coating and developing unit to obtain the line width of the resist film (see col.14, lines 53-55). It is the Examiner's position that for the sake of simplicity, Yoshioka lacks to show "the optical system for exposing at least a portion of the resist film to a light source". These features are seen to be inherent teachings of an exposure apparatus and are well known per se and must be present for the exposure apparatus to function as intended. Thus, Yoshioka discloses substantially all of the limitations of the instant claims. Yoshioka does not expressly disclose determining the exposure time of the exposure control apparatus based on the resist film

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temperature data from the resist coating and developing apparatus. However, Yoshioka clearly teaches the relationship between the line width of the resist film and temperature data for resist coating and developing apparatus (see figs. 7-8, 10 and col.14, lines 50-52) and further teaches the information on the measurement of the line width is fed back so as to control at least one of the resist coating condition ...temperature of the resist solution...the light exposure conditions such as the light exposure time and the focal length, the baking temperature and the baking time” (see col.12, lines 44-54); “the CPU 45 delivers a command signal to the light exposure device based on the results of the line width measurement....to correct each of the conditions on the exposure step S9A such as the light exposure time, the light exposure focus point” (see col.15, lines 15-22), or “it is possible to transmit the result of the line width measurement of the latent image pattern or the result of the line width measurement of the actual resist pattern from the resist coating developing system to the controller (not shown) of the light exposure device so as to permit the arithmetic operation to obtain the value of correction of the various parameters to be carried out on the side of the light exposure device (see col.15, lines 23-34). This provides a clear suggestion that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Yoshioka to obtain the invention as specified in the above claims. In view of Yoshioka’s teachings, it would have been obvious to a skilled artisan to set a desired exposure time based on the resist film temperature data obtained from the coating and developing apparatus to thereby improve the quality of the images to be printed.

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***Prior Art Made of Record***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Cohen et al (U.S.Pat. 6,424,417) teaches a method and system for controlling the photolithography process, comprising coater, developer unit, and exposure unit, wherein at least one parameter of the substrate is measured prior to its processing, and the measured data is generated, and analyzed with respect to the preset value of the working parameter and to the process results to determine whether the preset value should be corrected.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

hvn  
May 21, 2003

  
HENRY HUNG NGUYEN  
PRIMARY EXAMINER